

IN THE CLAIMS

Please substitute the claim set in the appendix entitled Clean Version of Pending Claims for the previously pending claim set. The substitute claim set is intended to reflect amendment of previously pending claims 1, 6-8, 13, 14, 16-21, and 26 and addition of new claims 42-53. The specific amendments to individual claims are detailed in the following marked up set of claims.

1. (Amended) A memory device comprising:

a delay locked loop (DLL) for generating an internal clock signal based on an external clock signal, the DLL keeping the external and internal clock signals synchronized by performing a synchronization operation; and

a DLL controller having a selector connected to the DLL for selectively activating a DLL control signal during a test mode of the memory device to prevent the DLL from performing the synchronization operation during the test mode.

6. (Amended) The memory device of claim 1, wherein the DLL includes:

a phase detector for comparing the external and internal clock [signal] signals to activate a shifting signal when the external and internal clock signals are not synchronized; and

a shift register for performing a shifting operation based on the shifting signal to keep the external and internal clock signals synchronized.

7. (Amended) The memory device of claim 6, wherein the DLL controller includes:

a test mode select input for receiving a select signal during the test mode;

a test mode control input for receiving a test control signal during the test mode; and

an output connected to the DLL for providing the DLL control signal, wherein during the test mode, the activation of the DLL control signal is based on the test control signal and in responding to the select signal.

8. (Amended) A memory device comprising:

a delay locked loop (DLL) for applying a delay to an external clock signal to generate an

internal clock signal, the DLL adjusting the delay to keep the external and internal clock signals synchronized; and

a DLL controller having a selector connected to the DLL for selectively activating a DLL control signal during a test mode of the memory device to prevent the DLL from adjusting the delay during the test mode.

13. (Amended) The memory device of claim 8, wherein the DLL controller includes:
a test mode select input for receiving a select signal during the test;
a test mode control input for receiving a test control signal during the test; and
an output connected to the DLL for providing the DLL control signal, wherein during the test mode, the activation of the DLL control signal is based on the test control signal and in responding to the select signal.

14. (Amended) A memory device comprising:
a plurality of inputs for receiving a plurality of input signals and an external clock signal;
a delay locked loop (DLL) for generating an internal clock signal based on the external clock signal, the DLL performing a shifting operation to keep the external and internal clock signals synchronized;
a decode circuit for activating a test mode signal based on a certain combination of the input signals to initiate a test mode of the memory device; and
a DLL controller having a selector connected to the DLL for selectively activating a DLL control signal to disable the shifting operation during the test mode.

16. (Amended) The memory device of claim 14, wherein the DLL includes a delay line having a plurality of delay stages connected in series [, wherein a number of the delay stages applies] for applying an amount of delay to the external clock signal to generate the internal clock signal.

A

17. (Amended) The memory device of claim 14, wherein the DLL further includes:

a phase detector for comparing the external and internal clock signals to activate a shifting signal when the external and internal clock signals are not synchronized; and

a shift register for adjusting the amount of delay based on the shifting signal to keep the external and internal clock signals synchronized.

18. (Amended) The memory device of claim 14, wherein the DLL controller includes:

a test mode select input for receiving a select signal during the test;

a test mode control input for receiving a test control signal during the test; and

an output connected to the DLL for providing the DLL control signal, wherein during the test mode, the activation of the DLL control signal is based on the test control signal and in responding to the select signal.

19. (Amended) A memory device comprising:

a delay line for applying an amount of delay to the external clock signal to generate the internal clock signal;

a phase detector for comparing the external and internal clock signals to activate a shifting signal when the external and internal clock signals are not synchronized;

a shift register for performing a shifting operation to adjust the amount of delay based on the shifting signal to keep the external and internal clock signals synchronized;

a test mode select input for receiving a test select signal;

a test mode control input for receiving test control signal; and

an output connected to the phase detector providing the DLL control signal [, wherein the DLL control signal deactivates] for selectively disable the shifting operation [when the test select and test control signals are activated] based on the test select signal and the test control signal during a test mode.

20. (Amended) The memory device of claim 19, wherein the phase detector includes:

input latches [to receive] for receiving the external clock signal and a feedback signal to

A

provide a first phase signal and a second phase signal, the feedback signal being a delayed version of the internal clock signal [, the input latches provide a first and second phase signals];

a logic circuit connected to the input latches [to receive] for receiving the first and second phase signals to generate pre-shifting signals;

output latches for activating shifting signals based on the pre-shifting signals when the external and internal clock signals are not [synchronize] synchronized; and

and a shifting signal control circuit for deactivating the shifting [signal] signals during the test mode.

21. (Amended) A system comprising:

a processor; and

a memory device connected to the processor, the memory device including:

a delay locked loop (DLL) for generating an internal clock signal based on an external clock signal, the DLL keeping the external and internal clock signals synchronized by performing a synchronization operation; and

a DLL controller having a selector connected to the DLL for selectively activating a DLL control signal during a test mode of the memory device to prevent the DLL from performing the synchronization operation during the test mode.

26. (Amended) A system comprising:

a processor; and

a memory device connected to the processor, the memory device including:

a delay locked loop (DLL) for applying a delay to an external clock signal to generate an internal clock signal, the DLL adjusting the delay to keep the external and internal clock signals synchronized; and

a DLL controller having a selector connected to the DLL for selectively activating a DLL control signal during a test mode of the memory device to prevent the DLL from adjusting the delay during the test mode.

A

42. (New) A memory device comprising:
an input for receiving an external clock signal;
a delay locked loop (DLL) for generating an internal clock signal based on the external clock signal, the DLL having a synchronization operation for keeping the external and internal clock signals synchronized; and
a DLL controller having a selector connected to the DLL for generating a DLL control signal independently from the external clock signal during a test mode of the memory device to disable the synchronization operation for a suspension time during the test mode.

43. (New) The memory device of claim 1, wherein the DLL includes:
a phase detector for comparing the external and the internal clock signals to activate a shifting signal when the external and internal clock signals are not synchronized; and
a shift register for performing the shifting operation based on the shifting signal to keep the external and internal clock signals synchronized.

44. (New) The memory device of claim 42, wherein the selector includes a multiplexor for selecting between an active mode signal generated before the test mode and a test control signal generated during the test mode as the DLL control signal based on a test select signal.

45. (New) A memory device comprising:
an input for receiving an external clock signal;
a delay locked loop (DLL) having a delay line for applying a delay to the external clock signal to generate an internal clock signal, and having a shift register for adjusting the delay based a shifting signal; and
a DLL controller having a selector connected to the DLL for activating a DLL control signal independently from the external clock signal during a test mode of the memory device to prevent the shift register from adjusting the delay during the test mode.

A

46. (New) The memory device of claim 45, wherein the DLL further includes:
a phase detector for comparing the external and the internal clock signals to activate the shifting signal when the external and internal clock signals are not synchronized.

47. (New) The memory device of claim 45, wherein the selector includes a multiplexor for selecting between an active mode signal generated before the test mode and a test control signal generated during the test mode as the DLL control signal based on a test select signal.

48. (New) A memory device comprising:
a plurality of inputs for receiving a plurality of input signals and an external clock signal;
a delay locked loop (DLL) for generating an internal clock signal based on the external clock signal, the DLL having a shifting operation to keep the external and internal clock signals synchronized;
a decode circuit for activating a test mode signal based on a certain combination of the input signals to initiate a test mode of the memory device; and
a DLL controller having a selector connected to the DLL for activating a DLL control signal independently from the external clock signal to disable the shifting operation during the test mode.

49. (New) The memory device of claim 48, wherein the DLL includes:
a phase detector for comparing the external and the internal clock signals to activate a shifting signal when the external and internal clock signals are not synchronized; and
a shift register for performing the shifting operation based on the shifting signal to keep the external and internal clock signals synchronized.

50. (New) The memory device of claim 48, wherein the selector includes a multiplexor for selecting between an active mode signal generated before the test mode and a test control signal generated during the test mode as the DLL control signal based on a test select signal.



51. (New) A system comprising:

- a processor; and
- a memory device connected to the processor, the memory device including:
 - a plurality of inputs for receiving a plurality of input signals and an external clock signal;
 - a delay locked loop (DLL) for generating an internal clock signal based on the external clock signal, the DLL having a shifting operation to keep the external and internal clock signals synchronized;
 - a decode circuit for activating a test mode signal based on a certain combination of the input signals to initiate a test mode of the memory device; and
 - a DLL controller having a selector connected to the DLL for activating a DLL control signal independently from the external clock signal to disable the shifting operation during the test mode.

52. (New) The system of claim 51, wherein the DLL includes:

- a phase detector for comparing the external and the internal clock signals to activate a shifting signal when the external and internal clock signals are not synchronized; and
- a shift register for performing the shifting operation based on the shifting signal to keep the external and internal clock signals synchronized.

53. (New) The system of claim 51, wherein the selector includes a multiplexor for selecting between an active mode signal generated before the test mode and a test control signal generated during the test mode as the DLL control signal based on a test select signal.

A